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Division of Wildlife Refuges

Narrative Report Routing Slip

Refuge SNAKE CREEK Year 1964

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SNAKE CREEK NATIONAL WILDLIFE REFUGE
COLEHARBOR, NORTH DAKOTA

NARRATIVE REPORT

JANUARY THRU DECEMBER 1964

PERSONNEL

Refuge Manager	David C. McGlauchlin
Wetlands Manager	Ralph F. Fries
Refuge Clerk	Alton A. Burgeson
Maintenanceman	Marvin H. Boots

WAE EMPLOYEES

Laborer	June	21 -- Sept.	26	Lester A. Forland
Laborer	Sept.	3 -- Sept.	14	Orville J. Hart
Laborer	July	1 -- August	29	John C. Reith

C O N T E N T S

I. GENERAL

A. Weather Conditions.

	Precipitation			Max.	Min.
	Month	Normal	Snowfall	Temp.	Temp.
January	0.13	0.60	1.0	50	-24
February	0.13	0.59	1.0	47	-14
March	0.11	0.76	3.5		-13
April	3.23	1.24	2.5	68	
May	1.27	1.96		92	31
June	7.28	3.38		92	37
July	0.46	2.48		92	49
August	2.91	1.86		99	33
September	0.93	1.41		86	24
October	0.16	0.80		82	20
November	0.60	0.65	8.0	62	-18
December	0.76	0.46	6.5	35	-25
Annual Totals	17.97	16.19	22.5	Extremes 99	-25

The 22 year average for normal precipitation is from the Weather Bureau station at Garrison, N. Dak. The present weather data are from the refuge station for temperatures, and precipitation from the Corps of Engineers weather station at Riverdale, N. Dak.

This has been the third wet year in succession. Precipitation was 1.78 inches over the average, for the year. April, June and August were much wetter than normal, and the first and last of the year drier than normal.

The ground was bare of snow most of the winter, with no run-off in the spring. The winter of 1964-65 was a different situation with fourteen inches of snow in November and December. The last frost in the spring was

April 22; the first killing frost was August 12 and 13. This was sufficiently hard to freeze corn on low ground, but there was no frost on high ground.

Two hail storms hit the refuge during the summer. One on July 1, caused considerable crop damage north of the refuge and on the east end. One barley field just off the refuge was hailed out completely, and three refuge fields had about 20 to 40% damage. Another light hailstorm at headquarters did no damage. A horned lark nest with three fledglings came through the last hailstorm with no loss although the ground was covered with hail stones around the nest.

The final storm of the year came December 15-17. Snow fell most of December 15 with no wind until the evening. December 16 winds were in the 30-35 mph range with gusts to 45, and the temperature at -20 degrees. Visibility was not more than 200 feet all day. This storm caused considerable damage to wildlife; directly in birds lost (an estimated 50% loss in pheasants on the refuge), and indirectly in that drifting snow filled in all cover and covered food and grain. It appears that wildlife loss following this storm will be greater than the actual loss during the storm.

There is about eight to nine inches of snow on the ground at the end of the year.

B. Habitat Conditions

1. Water

Snake Creek pool was at 1829.85 elevation at the beginning of the year. No water was received from the reservoir because of the slumping of the riprap on the embankment and erosion. Heavy rains in June brought the pool up to the previous elevation of 1830.4 in early July. The pool gradually dropped to an elevation of 1828.44 at the close of the year.

Spring breakup came on April 17-18, freeze-up on November 19-20. It was interesting to note that the main pool just east of the embankment and the old Mud Lake area was the last to freeze and break up, probably because of the greater water depth. The island complex opened up a week earlier than the main pool. This is good because

the islands will be isolated relatively early for goose nesting.

All the natural sloughs and potholes filled with water and held water through the nesting season, but were dry by late summer.

Prospects are good for bringing Snake Creek pool up to the approved elevation of 1830.4 in 1965, by run-off. Garrison reservoir is expected to peak between 1835 and 1840 feet in 1965. However the riprap on the embankment has not been repaired yet and the Corps of Engineers have no plans yet for repairing it.

2. Food and Cover

This has been the third good growing season in a row. Upland vegetative cover was excellent during the summer and fall. This was not a sweet clover year but fire weed (Kochia) made stands almost as good as sweet clover. There was a bumper crop of berries and fruits, particularly buckbrush (Symphoricarpos), plums and buffalo berry. Corn was frosted so that it did not make a crop but there was plenty of other waste grains and weed seeds.

Upland cover was more than adequate during the summer and fall, but at the close of the year it is almost completely drifted in with snow. All weed patches are full and there is only a small amount of cover in tree plantings.

The pool is still relatively barren of aquatic vegetation. There were good stands of water smartweed in some of the flooded sloughs. Carlson slough in the northeast corner of the refuge had a good stand of hardstem bulrush. There were only trace amounts of water milfoil and sago in Snake Creek pool. In a few bays there were volunteer stands of softstem bulrush, cattail, smartweed, millet, cottonwood and willows at the water edge. Some are desirable and some will be a nuisance in the future.

There was a heavy algae bloom during most of the summer months, with blue-green algae persisting almost to freeze-up. Except for old alkali sloughs there is very little turbidity in the

water. It is possible to see the bottom at six to eight foot depths.

II WILDLIFE

A. Migratory Birds

Waterfowl use didn't turn out the way we expected it would this year. The spring migration was good, summer resident populations were much higher than expected, duck production was low, and the fall migration was considerably less than in 1963.

Apparently we had all the non-breeding and molting ducks in the area in July and August. There were an estimated 11,650 ducks, mainly baldpates, gadwalls, pintails and green-winged teal, here in July and August. Mallard use was proportionately very low, in both the summer and fall migration.

Swans: Whistling swan use over the years is gradually increasing, partly I suspect because we are attracting them from the Lake Nettie - Turtle Lake area. Greatest use in 1964 was during the spring when there were 114 swans here for a short time. There was a peak of 35 swans during the fall, but we had swans here all during October. The State warden brought in a crippled female swan November 23. It was wing clipped and released in the goose pen, but later died, apparently from lead poisoning.

Geese: Total goose usage increased this year, due to more spring migration use, and a larger refuge flock. The fall flight was down slightly from last year. White-fronted geese continue to lead in maximum numbers, with a peak of 400 in April, and 350 in October. This is by far the most white-fronts we have had in the spring.

Canada, blue and snow goose usage and numbers were almost identical with the 1963 fall flight. The refuge flock of geese continues to gain.

TOTAL WATERFOWL DAYS USE, JAN. 1 - DEC. 31

	Swans	Geese	Ducks	Coots
1960	112	20,783	1,024,450	165,950
1961	258	10,600	128,600	51,050
1962	0	30,050	1,494,520	176,620
1963	785	38,660	2,897,000	227,360
1964	1,400	40,125	2,123,000	330,920

PEAK NUMBER OF WATERFOWL

	Swans	Geese	Ducks	Coots
1960	15	112	11,000	4,000
1961	40	108	1,100	500
1962	0	825	32,850	3,300
1963	75	850	86,270	8,000
1964	114	622	21,370	4,000

CANADA GOOSE PRODUCTION

1960	4
1961	1
1962	11
1963	15
1964	19

Out of seven goose nests, nineteen goslings were raised. See Section V for more details on the goose flock.

Ducks: The spring flight of ducks increased about 20% over 1963, which is rather light considering the water area on the refuge had increased over 500%. Summer use more than made up for it, with a peak number of 11,650 ducks here in August, compared with 4300 in 1963. In order of abundance they were: Pintails, gadwalls, baldpates, mallards, green-winged teal, and lesser amounts of blue-wings, shovelers, redheads and scaup.

Duck production was disappointing. We made three surveys, one in May for breeding pairs, one in early July for duck nests, and one in August for broods. Results are tabulated on next page.

DUCK PRODUCTION, 1964

	Breeding Pair Count Pairs + Males	Island Nests	Broods
Mallard	123	4	9 (3.2) = 29
Gadwall	147	25	20 (5.8) = 117
Baldpate	33	1	
Pintail	121		
BW teal	191	4	2 (5) = 10
GW teal	12		
Shoveler	85	1	1 (3) = 3
Unid	6	60	19 (2.5) = 47
Redhead	15		1 (2) = 2
Scaup	80	2	
Ruddy	35		
Ringneck	1		
	849	97	52 broods = 208 ducklings

The pair count covers about one third of the shoreline of the refuge, along the south shore of the pool from the embankment eastward to the east side of the big coulee. The nest count includes most of the islands (110) in the refuge. The brood count covered all of the water area on the refuge.

If the pair count is extended for the entire refuge it would be about 2400 pairs of breeding ducks.

The nest count of the islands is estimated to be about half of the total nesting area on the refuge. Using these proportions and extrapolating to cover the entire refuge we have:

Pair Counts	Nests	Broods Observed	Broods Estimated
2547 pair	194	52	200 x 4 = 800 young

The surprising change in waterfowl use was the extremely high population of motting ducks in the east end of the refuge. There were an estimated 10,000 ducks at the peak on the east side of Mud Lake and in Carlson slough to the north.

Fall migration use decreased 56% this year, practically all in mallard use, but with all species down significantly. Scaup and shoveler use was down considerably from past years. Freeze-up came on November 19

and 20. About 200 mallards continued to come to the goose pen daily for grain; they apparently were spending nights on the river below the dam.

Coot use during the spring was about equal to recent years, but summer and fall use was down. This is probably because the pool had been flooded for a year and there was less food available.

Water and Marsh Birds

Western grebe use has increased tremendously. We had 40 recorded in 1963, 200 in 1964. There were 15 or 20 western grebe nests in Carlson slough, and apparently they were nesting on islands in the northeast part of the refuge; several adults with young were seen in areas where there was no emergent vegetation at all. Minnows were probably the big attraction for the western grebes. The pelican and cormorant colonies are increasing also. Pelicans are not nesting on the refuge yet, but probably will within a year or two. Cormorants had a small nesting colony in flooded trees just inside the State area. Great blue and black-crowned herons showed no change this year. No bitterns or loons were seen this year. One snowy egret was seen at the ditch in Section 30 on September 19; this is the second year we have seen egrets in this area. The spring flight of sandhill cranes was about normal. Most cranes go straight through in the spring, with only a few birds staying for a few days. The fall flight increased with a peak of 200 compared with 75 in 1963. A flock of about 100 spent most of October on the refuge. The cranes moved between the refuge and Lake Nettie almost daily.

Shorebirds, Gulls & Terns

Ring-billed gulls remain about the same, with twenty to fifty here from ice-out to freeze-up. Franklin gulls decreased considerably, from a peak of 50,000 in 1963 (Sept.) to 2000 this year. Franklin gulls remain on the refuge all summer now. Common terns have taken over at least five small islands for nesting now. There doesn't seem to be any competition between nesting terns and ducks. One small island of about 1200 square feet had at least 50 tern nests and five duck nests, along with a few avocets. Wilson's snipe did not seem to be quite so common in the fall flight. Avocets have increased with the water area, marbled godwits have decreased. Much of the low salt grass

meadow the godwits preferred for nesting has been flooded, while the avocets are taking to the islands quite well.

B. Upland Game Birds

Ringneck pheasants and Gray partridge were up, sharptail grouse were down. Only one brood of sharptail was seen this year. The dancing ground count was down considerably, with one big ground (No. 2) disappeared completely.

Ground:	1	2	3	4	5	6	7 (new)	8 (new)	Total Males
1960	8	20	12	2	20	6			68
1961	6	16	10		13		14		59
1962	2	15	4		21		13		55
1963	5	19	#	#	#		#		24
1964	4	0		4	16		6	7	37

Rained out

Ground #2 was apparently abandoned this year. An intensive search was made over two sections and only one grouse was found. Ground 7 is a new ground, in Section 8. Ground 1 is on an island now, about a mile from the mainland, but still had use this spring.

Gray partridge have increased slightly. Broods were common throughout the refuge although many were late. There seemed to be some disruption of nesting, possibly because of heavy rains in May and June. Lone partridge were seen quite often in late May, but paired up again in June.

Ring-necked pheasants were at a high point for the refuge by late summer, but are going to be set back by the winter. A severe blizzard on December 16 Killed quite a few pheasants and drifting snow filled all the cover.

C. Big Game Animals

The white-tailed deer recovered from the low of 1963 very well. There was no aerial count for deer last year but it was quite apparent by late summer that we had about 75 deer on the refuge. The estimated deer kill during the hunting season was about 45 deer.

As in other years there was a movement into the refuge immediately after the deer season and at the close of the year there are about 100 deer on the refuge. One herd of about 50 is "yarding" at the south end of the big coulee along the Coleharbor road.

The usual pattern is for the deer to winter on the refuge and then about half disperse outside in the spring.

Of 31 deer that we checked during the season, only two were more than two and a half years old. The age classes of deer checked are:

No.	Age	%
9 deer	½	29%
14 "	1½	45%
7	2½	23%
1	4½	3%

This is based in favor of buck deer (hunter preference), but the point is that there is a fairly rapid turnover in the deer population.

The antelope herd is doing well on the refuge but they are scarce outside the refuge. There has been an increase from about 40 antelope in December, 1963, to 50 in December, 1964. There was a known kill of 26 antelope on the refuge and two just outside. At the close of the year 50 antelope are wintering just north of headquarters. One antelope died following the December blizzard.

D. Fur Animals, Predators, Rodents and Other Mammals

One beaver was reported on the refuge in 1963, but there was no sign of it in 1964. The muskrat population is increasing slowly with the increase in water area. A few single muskrats are scattered throughout the refuge. These are all "bank rats." There were four houses in Carlson slough.

Mink are increasing also. Tracks were quite common along the shore line by late summer, particularly in the east end of the refuge. Raccoons also are increasing. Raccoons are abundant enough to be a nuisance, particularly around the goose pen. Skunks have increased very much from a low point in the late fifties. Thirteen skunks were taken around the goose

pen in traps in September. Skunk sign is abundant throughout the refuge.

J. Martinson, Corps of Engineers ranger at Riverdale, reported a coyote on the ice of Snake Creek pool on February 18. This should be a reliable observation, and would be the first coyote on the refuge.

Foxes seem to have decreased slightly. Very few were seen during the summer, and no dens were found in the spring. They are still abundant however.

One long-tailed weasel was seen at the cattle guard south of headquarters in September.

Jackrabbits are still abundant with no apparent change. Cottontail rabbits raised a litter at refuge headquarters, but are still very scarce.

The mouse population has dropped to a very low point from a high just three years ago.

E. Hawks, Eagles, Owls & Crows

Two golden eagles remained on the refuge most of the winter of 1962-63. Periodically one would make a pass over the goose pen but no geese were taken. Presumably the same two returned in October, and for a time in November there were three on the refuge.

One bald eagle was seen twice just off the refuge in the fall. Usually we have two or three bald eagles during the deer season but none were seen at that time.

A pair of ferruginous rough-legged hawks nested in trees at the Hagberg place. This is the first nesting record we have for any hawks on the refuge. Practically none of the common hawks were seen in migration either spring or fall with the exception of marsh hawks and sparrow hawks. Sparrow hawks were very abundant in August.

Snowy owls remained on the refuge as late as April 10, and were back again by November 8. A maximum of Six were seen in December. This is the third year of snowy owl abundance. Great horned owls are present but not abundant. Short eared owls have been very scarce the past year.

Crows pass through the refuge in the spring and fall but are not resident here.

The fall migration occurred September 11, almost a month early.

F. Other Birds

A nighthawk was seen at headquarters September 15, for the second record on the refuge.

A flock of common red polls spent the winter of 1962-63 here. They have probably been here before but this was the first record we have for them.

Other birds observed on the refuge for a first record are:

Male Cinnamon Teal	May 22, 1964
Smith's Longspur	March 7, 1964
6 Cedar Waxwings	April 9, 1964

Western meadowlarks seemed to be especially abundant

in September.

G. Fish

We have fish all through the refuge now. Species reported by the District Fishery Management Biologist are:

Northern Pike#	Carp	Fathead Minnow
Walleye#	White Bass#	
Yellow Perch	White Sucker	
Largemouth Bass#	Redhorse Sucker	Black Crappie
Rainbow Trout	Goldeye	

#Stocked by State Game & Fish Dept. in State portion of Snake Creek pool.

There was no sign of carp spawning in the pool although I found one small two inch carp in August. In both the reservoir and Snake Creek pool carp seem to spawn on a rising water level, but if it is held level they will not spawn. If so, this will be an easy way to control carp in Snake Creek pool.

Fishing for perch and northern pike has been very

good the past year on the State area. With some management Snake Creek pool can be one of the best fishing areas in the State.

H. Reptiles and Amphibians

We have practically nothing to report in this category. Spring peepers and leopard frogs are common in sloughs. An occasional garter snake is seen. As far as I know there are no snapping turtles on the refuge.

III PHYSICAL DEVELOPMENT & MAINTENANCE

A. Physical Development

There was no construction work other than O & M projects this year. A list of projects are:

1. Reshaped, graveled 2¾ miles of trail east end of refuge, from county road west to ¼ line of Section 8 and south.

2. Dug out channel and deepened bay in pool for boat dock, sloped and graveled boat launching ramp.

3. Set piling and installed staff gauge on pool.

4. Fenced 1¼ mile exterior boundary fence at Lake Nettie Refuge.

5. Fenced ¾ mile north side of refuge west of Mehlhoff road.

6. Pulled all boundary buoys in pool, replaced anchor lines with guy wire, maintenance as needed.

7. Checked posting on refuge and easements. Fence repairs around refuge boundary.

8. Remodeled one surplus bomb trailer for flat bed implement trailor.

9. Installed 500 gallon TANK and pump on another bomb trailer for diesel fuel.

10. Installed new pre-fabricated chimney on service building to replace wind damaged chimney.

11. Installed aluminum canopy over back door of residence. A month later wind took it off.

12. Calked and fiber-glassed bottom of wood scow.

13. Put up martin house at headquarters.

14. Buried 1¼" plastic water pipe to north and west goose pens.

15. Replaced trees in shelterbelts, cultivated as necessary.

16. Replaced underground telephone line to residence.

17. Made map of refuge at 1830 pool elevation from aerial photos.

18. Painted and erected fishing information sign at headquarters, repainted one highway sign.

19. Mowed trails and fire breaks. Graded roads and trails.

20. Installed surplus Game Management radio in Studebaker.

21. Built walk-in duck trap in goose pen.

22. Checked all big islands for mammals an predators, smoke bombed all dens in spring.

23. Collected plants, started on refuge herbarium.

24. Dragged some of the larger islands for duck nests.

25. Made nesting island in display pen.

26. Built and mounted experimental post driver on stake truck.

27. Made up three sets of cannons and rigging for cannon net traps.

28. Repairs and service of all mechanical equipment as necessary.

29. Goose flock care - predator control, separation of breeding pair.

30. Rehung gates at Okerson, Thompson corners east end of refuge.

31. Helped move Turtle Lake Wetland Office to Snake Creek Refuge.

32. Built two level loading ramp.

33. Hauled several loads of surplus steam pipe and poles from Riverdale.

34. Made snow bucket for front end loader on Oliver tractor.

B. Planting

1. Aquatic and Marsh Plants

Five man-days were spent transplanting hardstem bulrush from Carlson slough to the south shore of the pool in Sections 1, 2 and 3. About 100 clumps of root stocks were planted along the shoreline. Some stems were clipped by deer or muskrats but this is not important. All transplants seemed to be thriving.

2. Trees and Shrubs

About 200 buffaloberry, Russian olives and American elms were planted in the south shelterbelt as replacement stock. They were planted in a steady drizzle of rain, and all leafed out during the summer. Three spruce and three ponderoza pine were planted in the headquarters area. These were received from Lake Ilo refuge. The spruce survived, the pines all died, mostly because of dirt loss around the roots in moving them.

3. Upland Herbaceous Plants

About 15 acres of crested wheat grass was seeded in farm unit A-7 next to the water, and 43 acres in A-21 unit were seeded to crested wheat grass. A-21 unit is being retired.

4. Cultivated Crops

The 1964 crop was a good average year. No grain was harvested for the refuge share, it was all swathed and left in the fields. For the refuge share there were 279 acres of barley, 39 of wheat, 94 of corn, and 32 acres of millet. All the farming for 1964 was done on the permittee basis. August 12 and 13 was our first killing frost, which pretty well ruined the corn crop.

Barley averaged 25.3, wheat 24.7, rye 14.3 and oats 32.7 bushels per acre.

Farm unit A-21 is being retired and seeded to crested wheat grass.

Plans are being made to change the farming program, to get better waterfowl use. Every year there is more boundary shooting where the farm unit is right up against the boundary fence.

C. Collections and Receipts

1. Seed or other Propagules

About 100 rootstock clumps of hardstem bulrush were collected from northeast end of refuge; all were transplanted.

Three ponderoza pine and three Black Hill spruce were received from Lake Ilo refuge.

Buffaloberry	80	2 yr. old	transplants
American Elm	25	"	"	"
Russian Olive	100	"	"	"

All received from SCS and planted

2. Specimens

A number of plants were collected and pressed for a start on the refuge herbarium. However we don't have them all classified or identified yet.

D. Control of Vegetation

The only control of vegetation was the usual spraying of mustard in grain crops by permittees. The herbicide is 2,4-D in water carrier at about ½ to 1 pound per acre. This is almost 100% successful.

E. Planned Burning

None

F. Fires

No fires on the refuge, although a combine crew started a fire in a grain field just outside the refuge boundary. The wind was blowing directly towards the refuge at about 25 mph, temperature was in the 90's, with very low humidity. The fire was put out with the assistance of local fire department, refuge fire trailer and local farmers. The fire was stopped just yards short of the refuge fence.

IV RESOURCE MANAGEMENT

A. Grazing

All three grazing units were used this year, and all are in fair to good condition. With the heavy snowfall received this winter they should be in top condition for next summer.

Income from grazing goes directly to Corps of Engineers.

B. Haying

There is no haying on the refuge now.

C. Fur Harvest

This year for the first time a permit was issued to LaVern Schlosser of Coleharbor for trapping. Vern just got his traps out when they were snowed in. His catch was one skunk. There was no income from this permit.

D. Timber Removal

None

E. Commercial Fishing

None

F. Other Uses

None

V FIELD INVESTIGATION OR APPLIED RESEARCH

A. Captive Goose Flock

The flock at the beginning of the year numbered 44 geese, including eight pinioned geese. What seemed to be most of the hatch of 1963, and part of 1962 disappeared in April. As near as we know they migrated north, and returned in late summer. There were reports of "tame" Canada geese in the river at Burlington, but these may have been Upper Souris geese.

Gosling production was as follows:

Pair	Hatch	Goslings Lost	Reared
P & F (North pen)	2 (incubator)	0	2
P & F "	3 "	0	3
P & F (East pen)	1	1 (predation)	0
F & F (West pen)	6	0	6
P & F (pool)	2	0	2
F & F "	3	0	3
F & F "	3	0	3
	20	1	19

P - PINIONED
F - FREEFLIER

goslings reared

We traded one non-nesting pinioned goose (female) back to A. J. Erickson in return for one of his pinioned birds, partly so he could keep up his strain of "giant" geese, partly on the chance we would get a goose that would mate. At least one of our geese was shot on Mallard island in the reservoir, and all together six were missing at the end of the goose season, presumably casualties. There are 57 geese in the pen at the end of the year.

All the goslings except five were banded before flying stage.

B. Duck Banding

We made two attempts at duck banding this year, to get some idea of what is happening to the Snake Creek duck flock.

In a walk-in trap in the goose pen we banded:

	Walk-in trap 7/10 - 20	Drive trapping 7/23 - 28	Total	Foreign birds
BW Teal	5	14	19	
GW Teal		115	115	1
Pintail	4	387	391	
Gadwall	17	22	39	
Baldpate	3	48	51	
Mallard	3	108	111	2
Redhead	11		11	
Coot		207	207	
			944 ducks banded	

There were 14 goslings banded also in the goose roundup for a total of 958 waterfowl.

VI PUBLIC RELATIONS

A. Recreational Use

Recreational use on the refuge is still limited to deer and antelope hunting. However the number of people who come in to get information, mostly on weekends, has just about doubled. This is because word on the wonderful fishing at Snake Creek (State area) is getting around, and we have the only sign on Hwy. 83 mentioning Snake Creek, in Snake Creek Refuge. This is an excellent opportunity to advertise the refuge and what we are doing, while directing fishermen.

B. Refuge Visitors

Date	Name	Title or Address	Purpose
1/24	C. Boots	Coleharbor, N. D.	Farming
1/24	M. Mansfield	Slade refuge	Visit
2/27	R. Scheer	Minot Daily News	Write up on refuge
3/4	E. Diercks	SCS - Washburn	Tour of refuge
3/18	L. Johnson	State Game Warden	" "
3/30	B. Daugherty	Branch of Fishery Management	Fish management

Date	Name	Title or Address	Purpose
4/21	D. Zimmerman	Garrison, N. D.	Whooping crane observation
4/28	B. Branvig	Agriculture Dept.	Grasshopper control
4/29	G. Braschler	RO-Fish Hatcheries	Tour of refuge
	D. Foster	Univ. of Missouri	" "
	R. Anderson	" "	" "
5/12	B. Mortensen and crew	Jamestown, AAO	Survey Lake Nettie
5/20	"	"	"
5/30	E. Collins & family	Pocasse refuge	Visit
6/9	N. Reff	SCS Garrison	Farming
"	J. Umberger	RO-Engineering	Inspection
	T. Reed	CO- "	"
6/13	G. Enyeart	State Game Biologist	Tour
"	Samson Ipoot	Uganda, Africa	Tour
"	Dan Indiyo	Kenya, Africa	Tour
6/17	A. Klain	Turtle Lake, N. D.	Sale of buildings
6/23	B. Daugherty 2 assistants	Br. of Fisheries	Checked flooded sloughs
6/24	J. Paulsen	Ex-Horicon refuge	Tour
7/2	B. Branvig	Agriculture Dept.	Grasshopper control
7/3	R. Randall	MRBS, Bismarck	Banding
7/9	E. Trecker	RO-Refuges	Recreation
7/11	Mr. Mrs. C. J. Henry	National Bison Range	Visit
7/13	C. Schuler	Tewaukon refuge	Surplus parts
7/17	H. Dill	RO-Refuges	Inspection
7/17	C. Webster	CO-Refuges	Inspection
7/23	B. Schrank	Upper Souris refuge	Banding
"	R. Fries	Wetlands office	Banding
7/28	F. McKinney	Univ. of Minn.	Shoveler ducks
8/3	B. Daugherty	Br. of Fisheries	Fish management
8/10	C. Rich	State Game Warden	Refuge geese
8/15	Dr. W. Elder	Univ. of Missouri	Visit
9/9	H. Jensen	GMA N. Dak.	Banding
"	H. Duncan	GMA Wisc.	"
"	C. Schroeder	State Biologist	"
9/27	H. Josephson	Riverdale Corps of Engineers	Hunting
"	B. Bramley	"	"

Date	Name	Title or Address	Purpose
10/8	Biology class	Garrison, N. Dak.	Tour of refuge
10/15	P. Handy	Garrison, NFH	Rental survey
	W. Schmidt	RO-Fish H.	"
10/20	F. Gillett	CO-Refuges	Inspect WPA
	F. Carpenter	RO-Refuges	"
10/23	L. Harrison	RO-Refuges	Rental survey
	E. Smith	RO-Refuges	"
10/26	H. Stiles	RO	Courtesy call
	L. Dundas	RO	"
11/17	M. Mansfield	Slade refuge	Pick up Snake Creek truck
	T. Schauer	"	"
11/24	N. Peabody	Lostwood refuge	Brought goose
11/24	Thompson	N. D. Highway Patrol	See goose flock
11/24	P. Lowthers	"	"
12/7	A. J. Erickson	Wilton, N. Dak.	Goose replacement
12/8	H. Bradley,	Des Lacs refuge	Surplus parts
12/9	M. Mansfield	Slade refuge	Surplus parts

C. Refuge Participation

1.

Personnel	Organization	Date
McGlauchlin	N.D. Chapter, Wildlife Soc.	1/24/64
"	RO Conference	2/3-7/64
"	Hazen Sportsmen's Club-show slides, talk	2/28/64
"	N.D. Wildlife Fed. meeting McCluskey, N. Dak.	4/4/64
"	MRBS tour of McCluskey Canal Wildlife Dev.	5/20/64
"	Garrison Civic Club tourism meeting - talk on refuge	5/26/64
"	Technical Session, Central Flyway meeting, Bismarck	8/6/64
"	Ammonium Nitrate Blasting Demonstration, State Game Management area	8/26/64
Boots Burgeson	Welding Safety Meeting, Long Lake Refuge	5/14/64

2. Information for Public

One news release to newspapers on fishing on refuge. Information on refuge to Garrison Civics Club - Tour map. Fries participated in a half hour TV show on wetlands program and waterfowl identification.

Bob Scheer of the Minot Daily News had an excellent full page feature story on area refuges and the fish hatchery, and used several Snake Creek photos.

D. Hunting

There were two big game hunting seasons on Snake Creek refuge; one a nine and a half day season for antelop, and a nine and a half day season for deer. There were 50 antelope permits issued for the Coleharbor area. Twenty six antelope were taken on the refuge and two just outside the fence. Only one local hunter failed to get an antelope. The breakdown on the antelope kill is:

Adult Male	Adult Female	Kid Male	Kid Female	Unknown
13	5	3	4	1

About 30 to 35 man days were spent hunting antelope on the refuge, practically all in the first day and a half. There were no hunters on the refuge at all most of the time. There were at least fifty antelope remaining after the season. Practically all the antelope in the Coleharbor area were concentrated on the refuge both before and after the season.
One buck antelope had a spread of eighteen inches across the widest part of the horns, and another a spread of 16½ inches. These are the biggest spreads we have measured, and the big one is probably big enough to go in the record book. After the low population and kill of 1963 the deer herd recovered enough so that we had a known kill of 38 deer, and an estimated kill of 42 to 45. The sex ratio was 28 bucks and 10 does. Three deer were found dead but lost by the hunter.

It was obvious that we had two classes of hunters; the meat hunter and the buck hunter. Practically every one of the meat hunters had a deer the first half day;

many of the buck hunters passed up chances at does or small bucks, looking for the big buck.

There were an estimated 70 to 80 man-days of deer hunting on the refuge. Waterfowl hunting adjacent to the refuge was good this fall, although not as good as the exceptional year of 1963. Boundary line hunting continues to develop with three locations now. These are the fence line in Secs. 33 and 34 of the northeast corner of the refuge, Secs. 15 and 16 of the southeast corner, and Secs. 1 and 2 of the southwest corner. At least four farmers posted their land next to the refuge boundary this year. From the refuge stand point this is highly desirable in that it reduces violations.

E. Violations

We had three apprehensions for hunting violations, and assisted State Warden Ralph Wright in another.

Jack New Burlington, N. Dak. age 16 Hunting in refuge
Escorted off refuge, given good lecture

H. Jansen Washburn, N. Dak. Late shooting $25. bond forfeited

J. Weise Washburn, N. Dak. Unsigned duck stamp No action

All three cases were turned over to the State Warden, but the Jansen case was the only one he would take into court.

Ralph Wright asked for our assistance in patrolling off the refuge on waterfowl late shooting, which resulted in the last two apprehensions.

Refuge trespass by fishermen in boats is a big problem. In most cases the fishermen don't see the buoys and signs, or ignore them. So far we have just informed them they were trespassing and explained the situation (also handing out a refuge leaflet and map. It apparently works; there have been no trespass a second time.

F. Safety

There have been a few informal safety meetings, mostly on the job. Our best practice continues to be a good attitude about safety, constant awareness of hazards,

and on the job supervision.

There still has been no lost time accidents at Snake Creek refuge since it was established in 1955, next May will be ten years.

A guard for the radiator grill was installed on the Oliver tractor. One hazard to be corrected is the use of 110V current and light bulb with open probs for testing electrical circuits.

VII OTHER ITEMS

A. Items of Interest

Ralph Fries, and the Turtle Lake Wetland Office transferred to Snake Creek refuge October 28. Ralph is still Wetland Manager but the office is under the administration of the refuge.

Because of the severe drought last fall and winter, the Indians on the Ft. Berthold reservation opened their sacred rain bundle April 18. This was the first time the rain bundle had been opened since 1938 when the drought of the early 30's was so bad. It is probably just a coincidence but a week later we had over two inches of rain in 30 hours, and ended up with twice the normal for April.

I am especially pleased with the cooperation we have been getting from the Garrison Fish Hatchery, particularly on equipment use and help. We are proud to have Paul Handy and Ray Wilmot for our nearest service neighbors.

Credit: McGlauchlin - Entire report except Forms 6, 7, 8, 8a, 9, 11, 12
Burgeson - Above forms and typing

B. Photographs are at the end of the report, as well as a report on the Wetland Office by Ralph Fries.

VII EASEMENT DISTRICT 3A

Lake Nettie Refuge

Weather conditions are practically the same for Lake Nettie as for Snake Creek; they are only five miles apart. However the water situation is still poor at Lake Nettie since there was no run-off into the lake. Water levels varied from 17.20 in the spring to 16.80 in the fall.

	4/17	7/29	9/30
Mallard	2	30	50
Gadwall	10	18	20
BW Teal		45	
GW Teal	8		
Pintail	10	24	
Shoveler			180
Baldpate			
Redhead		58	45
Canvasback	8		
Scaup	54	23	
Goldeneye			
Ruddy		120	
Coot		35	50

A. Weather Conditions

Weather conditions are practically the same for Lake Nettie as for Snake Creek; they are only five miles apart.

B. Habitat Conditions

1. Water

Lake Nettie still is very low. There was no run-off again, and rain kept the lake at a fairly constant level. Water levels varied from 17.20 in the spring to 16.80 in the fall. This is equivalent to about 30 to 36 inches water depth. As usual the water is very turbid.

2. Food and Cover

In the lake proper there are good stands of hard-stem bulrush north and east of the island but little elsewhere. There are scattered thin growths of widgeon grass throughout the lake. The big slough on the east side is a jungle of bulrush, cattails and Phragmites. Lee Britton seeded the southwest quarter of his farm to rye and grass, this is the only grain on the refuge.

II WILDLIFE

A. Migratory Birds

Waterfowl use is still very low. This decline in use is related to the increase in use on the east end of Snake Creek. Although we have no positive proof it is logical that Snake Creek is more attractive to ducks than Lake Nettie in its present condition, and the ducks and geese have simply moved to Snake Creek. During the summer there were never more than 200 ducks on the lake and half of these were coots. There was no fall flight through Lake Nettie, or we missed it if there was one.

Ring-necked pheasant are quite common around lake Nettie. There is an abundance of good cover for them but winter food is not too plentiful. Gray partridge have been fairly common around the refuge.

The white-tailed deer herd is thriving. Thirteen deer were seen at the north end in good brushy cover, and it was possible to see two or three deer all summer.

Sandhill cranes were abundant around Lake Nettie with 75 to 150 on the refuge during most of October.

Predators such as foxes, skunks and raccoons are abundant.

The buildings on the Krumwiede tract consisting of a machine shed and granary and a house were sold to Albert Klain in June. Mr. Klain was given until October 20 to remove the buildings but the granary and house were all he removed. One house belonging to T. Anderson in Turtle Lake is still there as well as Klain's machine shed.

Lee Britton had until September 1 to remove his buildings. He has them all off except the barn and a couple small sheds. Both the Britton and Krumwiede farm sites are full of junk and old fencing.

The south and west sides of the northeast quarter of Section 33 were fenced this summer, as well as the quarter mile of the Krumwiede tract that fronts on the county road. Gates were installed at the entrances to both tracts.

There was only a fair crop of rye on Britton tract and at this time it looks like a poor stand of grass.

Lee Britton had 20 cows and 18 calves in his grazing unit for a total of 72 AUM's. This pasture is still badly over grazed in spots but it is opening some of the jungle around the slough. For 1965 we are adding 50 acres of brome grass pasture to the north.

Camp & Strawberry Lake

There was no significant change at Camp and Strawberry Lakes except that more cottages have been built around Strawberry Lake. There is fair waterfowl use of Camp Lake but poor use of Strawberry Lake. Water level remained stable, within two inches of the spillway crest.

Waterfowl counts were:

	5/1	7/29	9/30	Broods observed
Mallard	60	32	20	1-4 class I
Gadwall	6		35	1-7 class II
Shoveler				
BW Teal		12	1	1-5 class II
Pintail	34			
Scaup	180		120	
Ruddy	45		40	
Canvasback	12		15	
Bufflehead	33		5	
Coot	12	10	1	6

There has been no further development on Camp Lake. Fishing, water skiing and swimming are becoming more popular in Strawberry Lake.

Cottonwood Lake

The Butte Sportsmen's Club were going to remove the plug in the ditch which drains into Cottonwood Lake. I don't know whether it was removed or not, but there was a flash flood in that area sometime in early July which completely filled the lake. Water is way over our gauge, and in September was about 1½ feet below the spillway. It was quite evident that water had flowed out of the spillway.

All of the stoplogs are in the spillway and there is a good bank of sand, gravel and cottonwoods in front of the spillway. (See photo section). There was no apparent damage to roads or the spillway.

Waterfowl use here is also very low. Not more than 60 ducks were seen at any time during the summer. Water in the lake is probably about six to seven feet deep now and this would make it less attractive to waterfowl.

	5/1	7/29	9/30
Mallard	15	6	40
Pintail	27		18
GW Teal	12		
Scaup	57		30
Ruddy	24	25	12
Coot		30	
Unid	4	6	

There are usually a few great blue herons, about 50 to 150 ring-billed gulls, and a scattering of eared grebes on the lake. No geese were seen this year although there were reports of a few in the area. Pete Lacaduc has a flock of geese and ducks two miles south of the lake and his birds trade back and forth some. There are a few pheasants in the area.

Wintering River

Water and vegetation remains the same. Water level was at 0.27 on the gauge in June but had dropped to 2" below the gauge in September. This is about 12 to 15 inches of water in the slough. If anything the cattail and bulrush is becoming more dense - it is impossible to see anything except in the channel along the northeast side. No brood count was made here because of the difficulty of observation. In June there were six redheads, four canvasbacks, and about 15 mallards observed, as well as coots. The estimated population was about 200 to 300 ducks at that time.

On October 5 I managed to flush 35 mallards, and saw five redheads, five ruddies, three scaup and three bufflehead.

This area probably receives pretty fair duck use for its size, but it is impossible to get any idea how much without watching it constantly.

Coon tracks were common along the shore. Mr. Kronberg reports deer are also common; they move in during the winter. This area would make an excellent wetland area but I don't believe there has been any activity on purchasing it.

Sheyenne Lake

Only one trip was made to Sheyenne Lake, on a brood count on July 29. The water is still very low, two feet below the culvert on the east side and a foot low on the west side. There were about 200 ducks present at that time, mostly mallards, thirty shovelers and seventy redheads.

Three broods of ducks were seen; one of bluewinged teal and two unidentified.

SIGNATURE PAGE

Submitted by:

David C. McGlauchlin
(Signature)
David C. McGlauchlin

Date: February 11, 1965

Refuge Manager
Title

Approved, Regional Office:

Date: _____

_____
(Signature)

Regional Refuge Supervisor

SNAKE CREEK WATERFOWL PRODUCTION AREAS

On November 1, 1964 the Turtle Lake Wetlands Office was closed, and the administrative duties for the wetlands in a four-county area were transferred to Snake Creek Refuge.

I EASEMENTS

County Commissioners were not approving purchases in 1964. Consequently, the Minot AAO has been concentrating on securing easements and 1964 was a banner year as Table I shows. As of December 31, 1964 there were 105,069 acres under easement

TABLE I
SNAKE CREEK EASEMENTS
(Total acres under easement by county)

County	1962	1963	1964	Total
Mc Henry		3,669	17,572	21,241
Mc Lean		160	4,208	4,368
Sheridan		1,008	14,885	15,893
Ward	1,546	2,060	59,961	63,567
Totals	1,546	6,897	96,626	

Grand total under easement thru 1964 - 105,069

Easements were aerially checked for compliance in the spring & fall. One easement violation was observed in the fall of 1964. Three wetlands on the Jay Monicken easement (32x) in the N½NW¼ of 3, T 152N, R 81W were drained. Mr. Monicken was notified of the violation & informed that the ditches would have to be plugged in the spring of 1965 as soon as weather conditions permit.

II PURCHASED AREAS

As previously stated, County Commissioners' approval to purchase tracts was limited. Only Sheridan County would approve any tracts for purchase and the realtors have experienced difficulty in securing willing sellers in this county.

Thru December 31, 1964 twenty one Waterfowl Production Areas had been purchased with the following distribution: Sheridan County, 12; Mc Lean County, 3; Ward County, 6; Mc Henry County, none.

A total of 4,516 acres has been purchased to date. Table II shows the acreage purchased in each county as of December 31, 1964.

TABLE II
Acres Purchased for WPAs
Snake Creek Wetlands District

County	1962	1963	1964	Total
Mc Henry				
Mc Lean		182	104	286
Sheridan	160	1,400	1,837	3,397
Ward	354	479		833
Total	514	2,061	1,941	

Grand total thru 1964 - 4,516

With the passage of Tax Relief Legislation Mc Lean County has again started to approve purchases. It is anticipated that Mc Henry County will also give limited approval.

In general, water conditions on the WPAs were very poor. In fact, most of the wetlands in this portion of North Dakota did not produce ducks in 1964 due to drouth conditions. Eleven of the 21 WPAs, or 52%, were dry during the brood raising period. When one considers that the WPAs are generally the better wetlands in the area, it can readilly be seen that wetland conditions were poor.

Breeding pair counts were taken on all WPAs as well as brood counts on those WPAs that had water during the brood season. Muskrat house counts were taken on the 2 areas where rats are present.

III DEVELOPMENT & MAINTENANCE

Fenced Stute WPA

Posted Thorson, Eddy, Kindschi, Papke, Stute, and Diamond WPAs.

A total of 611 acres of cropland on the Papke, Haas, Kindschi, Eddy, & Nelson WPAs was reseeded to native range grasses.

Cemented in brass caps to be used as water level reference points on all WPAs.

Filled in old well and basement foundation on Tkach WPA.

Dug cattle watering dugout on Grayson WPA.

Completed on the Tkach WPA with the D-7 borrowed from Snake Creek Refuge:

- Built 3 dams.
- Plugged 2 drainage ditches.
- Dug cattle watering dugout.
- Made 3 nesting islands.
- Made 8 deepened areas in shallow wetlands.
- Seeded dams, ditch plugs, and islands to grass.

Put in 3/4 mile of cross-fence on the Tkach WPA.

IV RESOURCE MANAGEMENT

Two grazing permits were in effect in 1964. One was for 83 AUMs ($152.72) on the Tkach WPA, and the other was an "off & on" permit for 95.5 AUMs ($175.72) on the Allen WPA.

Five cooperative farming permits were issued for the Papke, Eddy, Haas, Kindschi, & Nelson WPAs. The cooperators were allowed to harvest 90% of the crop and in return for the large share were required to seed the cropland to native grasses. The grass seed was furnished by the government.

SIGNATURE PAGE

Submitted by:

Ralph F. Fries
(Signature)
Ralph F. Fries

Date: February 11, 1965

Wetlands Manager
Title

Approved, Regional Office:

Date: 3-15-65

Edward J Smith
(Signature)

asst.
Regional Refuge Supervisor

SNAKE CREEK REFUGE

PHOTOS

Banding crew processing ducks after the big drive.
Clockwise from left foreground:

R. Fries	H. Anderson	M. Boots
J. Reith	A. Burgeson	

About half of the catch of a duck drive.
Mostly pintails with some mallards, gadwall, green-winged teal, and widgeon.

Ice heave on the west shore of old Mud Lake. This is probably worse than wave erosion on shorelines.

Stock pond dug in G-2 grazing unit. It had fairly good duck use in 1964.

The Upper Souris front-end loader loading gravel. A. Burgeson is the operator. This is one of the most valuable piece of equipment there is for refuge operations.

The two mile stretch of refuge trail which was rebuilt and graveled in 1964.


U.S. ARMY 870340

Volunteer stand of emergent and moist soil vegetation along pool shoreline. Cattail, softstem bulrush, spike rush, smartweed and wild millet.

Record class antelope buck taken on the refuge. September, 1964. 18½" spread.

Buildings remaining on the Krumwiede tract, Lake Nettie Refuge.

Buildings remaining on the Britton tract, Lake Nettie Refuge.

High water level after flash flood at Cottonwood Lake Refuge. The post in left center has a staff gauge on it about four feet below the water. The shoreline used to be 20 feet this side of the post.

Spillway at Cottonwood Lake. Water flowed out the culvert at the peak of the flood. There is a set of stop logs in place between the trees and the head wall.

New boundary fence on the west side of the Britton tract at Lake Nettie. View is to the south from the north quarter line of Sec. 33, with the refuge on the left side of the fence.

Cottages around Strawberry Lake Easement Refuge. Since this photo was taken more have been built on all the shoreline visible in the picture.

Hen Gadwall - We think

Drake Wedgeon

SNAKE CREEK WATERFOWL PRODUCTION AREAS

PHOTOS

Tkach WPA - Pushing plug into old drainage ditch. Wetland had been drained for so long that all traces of moist soil plants had vanished.

Tkach WPA - Dam will create a 4 acre wetland about 3 feet deep. Wetland should be ideal for courtship, nesting, and providing the needs of newly hatched broods. Area will probably go dry late in the season but a permanent wetland is located about ¼ mile away on the same tract & broods can move to that area if necessary.


JAN 65


JAN 65

Tkach WPA - Creating deepened areas in basin of flat bottomed wetlands. Many times in drier years these wetlands go dry all at once. These deepened areas will concentrate the water in pockets, thereby maintaining small water areas throughout the brood season.

Nearly dry type V wetland on private land along the south side of Highway 7, section 11, T 146N, R 80W showing general water conditions in area. Photo was taken on May 26, 1964 and wetland only had about 1 inch of water. Wetland was completely dry 10 days later. This wetland raised 9 broods of ducks in 1963 including a brood of 7 canvasbacks.


JAN
65


JAN
65

Wetland manager Fries on right getting ready to board hellicopter to check easements for compliance. Hellicopter was obtained from Minot Air Force Base free of charge

All WPAs in this district are open to public hunting and provide some of the best upland game habitat in the area. A lucky hunter bagged 2 cocks on the Kindschi WPA.

JAN 65

JAN 65

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Snake Creek MONTHS OF September TO December, 1964

(1) Species	(2) Weeks of reporting period 1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling						14	7	1	35	
Trumpeter										
Geese:										
Canada	42	61	110	110	220	100	250	250	250	165
[illegible]-Lesser						50	40	40	50	50
Brant										
White-fronted		25	65	65	140	350	250	4		
Snow					60	70	70	3		
Blue					9	12	12	3		
Other										
Ducks:										
Mallard	800	2,000	3,200	3,800	8,000	8,000	18,000	15,000	12,500	15,000
Black										
Gadwall	1,200	1,000	1,000	800	650	1,200	800	300		
Baldpate	400	400	400	400	400	800	300	300	250	200
Pintail	2,500	2,500	2,000	2,000	1,500	1,200	600	300	300	100
Green-winged teal	750	750	600	500	400	500	800	300	300	100
Blue-winged teal	400	400	300	300	350	300	50			
Cinnamon teal										
Shoveler	300	300	250	200	300	350	50	50		100
Wood		2								
Redhead	150	150	200	250	350	200	100	100		250
Ring-necked										
Canvasback				40	60					40
Scaup	250	250	100	300	300	550	150	200	500	600
Goldeneye					25	20	20			
Bufflehead					15	15	200	400	250	350
Ruddy	100	120	100	250	300	200	300	100	50	120
Other										
Coot:	3,000	2,500	2,000	1,800	1,500	900	400	250	150	200

Int. Dup. Sec., Wash., D. C. 37944

3 -1750a

Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Snake Creek MONTHS OF September TO December, 19 64

(1) Species	(2) Weeks of reporting period: 11	12	13	14	15	16	17	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling		1	1	1	1	1	1	1	448		
Trumpeter											
Geese:											
Canada	220	170	58	58	58	58	58	58	16,000		
Cackling Lesser	35								1,855		
Brant											
White-fronted									6,300		
Snow		13							1,500		
Blue									250		
Other											
Ducks:											
Mallard	15,000	500	100	100	200	200	200	200	719,600		
Black											
Gadwall									48,650		
Baldpate	150	30							28,200		
Pintail	200								92,400		
Green-winged teal	100	6							35,740		
Blue-winged teal									14,700		
Cinnamon teal											
Shoveler	50	3							13,670		
Wood									14		
Redhead	175								13,475		
Ring-necked											
Canvasback									980		
Scaup	400								25,200		
Goldeneye									450		
Bufflehead	300								8,600		
Ruddy	60								11,900		
Other											
Coot:	60								89,320		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	448	35	
Geese	25,900	622	
Ducks	1,013,584	21,370	
Coots	89,320	3,000	

SUMMARY

Principal feeding areas Throughout refuge in stubble fields, some concentration in farm units A-23, 24, 25, 26. Major water use was shallow areas around Mud Lake

Principal nesting areas

Reported by David C. McGlauchlin

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Snake Creek Months of September to December 1964

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Eared Grebe			4	Sept.-Oct	1	11/8				12
Pied-billed Grebe			30-40	"	6	10/17				50-100
Western Grebe			120	Sept.	12	10/17				200
White Pelican			300	Sept.1	12	10/17				300
Double-crested Cormorant			500	Sept.15	1	10/23				500
Sora Rail										
Wilson's Snipe			30-50	Sept.						50
Sandhill Crane			200	Oct. 15						200
Great Blue Heron			6	Sept.		11/8				12
Black-crowned Night Heron			80	Sept.						80
Snowy Egret			1	Sept.19						1
II. Shorebirds, Gulls and Terns:										
L. Yellowlegs			200	Oct.	3	10/17				200
Ringbilled Gull			100	Sept.-Oct.	50	10/17				150
Franklin Gull			2000	Sept. 7						2000
Least Tern					2	9/17				
Common Tern										
Black Tern										
Killdeer										
Avocet					8	10/17				75-100
Marbled Godwit										

(over)

(1)	(2)		(3)		(4)	(5)	(6)
III. Doves and Pigeons:							
Mourning dove			50	Sept. 1			50
White-winged dove							
IV. Predaceous Birds:							
Golden eagle	2	Oct. 7	3	Nov.			3
Duck hawk							
Horned owl	1	Nov.	2-3	Dec.			3
Magpie							
Raven							
Crow	200	Sept.	200	Sept.11			200
Bald Eagle	1	Oct.31	1	Oct.-Nov.			2
Marsh Hawk			12	Oct.			20
Snowy Owl	2	Nov. 8	6	Dec.			6
Rough-legged Hawk							
Sparrow Hawk							
						Reported by.....	

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total num of the species using the refu during the period concerned.

INT.-DUP. SEC., WASH., D.C.

59317

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge **Snake Creek** Months of **September** to **December**, 19**64**

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Sharp-tailed Grouse	**7000 a. prairie, cropland, "go-back"**		**1**	**5-10**					**75**	
Gray Partridge	**1500 a. stubble & "go-back"**		**5**	**10-12**					**200**	
Ring-necked Pheasant	**2000 a. cropland, "go-back", shelterbelts.**		**7**	**15**					**175 - 200**	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge Snake Creek Calendar Year / 64

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
White-tailed deer	9500 a. cropland, "go-back", prairie, shelterbelts.	45					2		1			100 - 120		
Pronghorn antelope	8000 a. cropland, "go-back", prairie	20 26										70		

Remarks:

Reported by _____

INSTRUCTIONS

Form NR-3 - BIG GAME

(1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.

(2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated total number of young produced on refuge.

(4) REMOVALS: Indicate total number in each category removed during the year.

(5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.

(6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.

(7) TOTAL REFUGE POPULATION: Give the estimated population of <u>each</u> <u>species</u> on the refuge at period of its greatest abundance and also as of Dec. 31.

(8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

3-1755
Form NR-5
60701

DISEASE

Refuge Snake Creek Year 19 64

Botulism

Period of outbreak Late July, August

Period of heaviest losses August

Losses:

	Actual Count	Estimated
(a) Waterfowl	14	100
(b) Shorebirds	6	20-30
(c) Other		

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Areas affected (location and approximate acreage)

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.

0' - 2' water depth, gradually receding, no reflooding

Condition of vegetation and invertebrate life

Heavy algae bloom

Remarks Not positively identified as botulism

Lead Poisoning or other Disease

Kind of disease Unidentified - lead poisoning suspected

Species affected Whistling swan, Mallard

Number Affected Species	Actual Count	Estimated
Swan	1	1

Number Recovered

Number lost

Source of infection

Water conditions

Food conditions

Remarks

NR-6

Bureau of Sport Fisheries and Wildlife

PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge **Snake Creek** Calendar Year **1964**

1. Visits

a. Hunting **200** b. Fishing **None** c. Miscellaneous **500** d. TOTAL VISITS **700**

1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl			
Upland Game			
Big Game	**70**	**6,500**	**Bureau**
Other			

Number of permanent blinds **None**

Man-days of bow hunting included above **None**

Estimated man-days of hunting on lands adjacent to refuge **1200**

1b. Fishing (area open to fishing on refuge lands)

NONE

TYPE OF AREA	ACRES	MILES
Ponds or Lakes		
Streams and Shores		

1c. Miscellaneous Visits

Recreation **150** Official **250**

Economic Use **100** Industrial

2. Refuge Participation (groups)

TYPE OF ORGANIZATION	NO. OF GROUPS	NUMBER IN GROUPS	NO. Of GROUPS	NUMBER IN GROUPS
Sportsmen Clubs			**6**	**200**
Bird and Garden Clubs	**1**	**2**		
Schools	**1**	**58**		
Service Clubs			**2**	**50**
Youth Groups			**2**	**100**
Professional-Scientific	**2**	**4**	**5**	**250**
Religious Groups				
State or Federal Govt.	**11**	**19**		
Other				

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases	**2**	Radio Presentations	
Newspapers (P.R.'s sent to)	**11**	Exhibits	
TV Presentations		Est. Exhibit Viewers	

3-1756
(Rev. 4/63)

INSTRUCTIONS

Item 1: Total of a, b, and c, equal d.

"Visit" - definition. Any person who is on refuge lands or waters during a day or part thereof for the purpose of: hunting, fishing, bird-watching, recreation, business or economic use, official visit, or similar interest. INCLUDE - those who stop within the refuge while traveling on a public highway because of an interest in the area. EXCLUDE - persons engaged in oil or other industry not directly related to the refuge, persons using refuge as most direct route or principal avenue of traffic, and those boating on navigable rivers or the Intercoastal Canal, unless they stop to observe wildlife on the refuge.

Computing visits. Where actual counts are impractical, "sampling" is used with midweek and weekend samples varied by season or weather. A conversion factor of 3.5 (of passengers per car) is used when accurate figures are not available. Each refuge will develop a conversion factor for boats based on range of usage. Count a camper once for each 24-hour period or fraction thereof.

Item 1a: Acres - of refuge open for each type of hunting.

Managed hunts require check in and out of hunters, issuance of permits, or assignment of blinds.

Other - INCLUDE crow, fox, and similar hunting.

Lands adjacent to refuge. Normally considered within 1 mile or less of boundary, unless established sampling procedures cover a wider area. For big game hunting, the distance may be greater.

Item 1b: Acres of streams open to fishing, if practical; otherwise just miles open. Information on "shores" is primarily for coastal fishing.

Item 1c: Recreation. INCLUDE photography, observing wildlife, picnicking, swimming, boating, camping, visitor center use, tours, etc. TOTAL Recreation, Official, and Economic Use visits under Item 1.

Industrial. INCLUDE persons engaged in industry, i.e., oil industry or factories. EXCLUDE these from Item 1.

Item 2: INCLUDE the "On Refuge" groups in Items 1c and 1. In "Off Refuge" column include only those group meetings in which refuge employees actually participate. EXCLUDE these from Items 1c and 1.

Item 3: Exhibits - INCLUDE displays, fairs, parades, and exhibits OFF the refuge; EXCLUDE those ON.

3-1757
Form NR-7
(April 1946)

PLANTINGS
(Marsh - Aquatic - Upland)

Refuge Snake Creek Year 1964

Species	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount & Nature of Propagules	Date of Planting	Survival	Cause of Loss	Remarks
Spruce	Headquarters yard		3 trees	5 - 6 year trees	April	100%		
Pine	"		"	"	"	None	Couldn't get started after being transplanted	
Buffaloberry	Headquarters Shelterbelt Replacements		80 seedlings		June 16			Survival will not be known until spring of 1965
American Elm	"		25 "		"			
Russian Olive	"		100 "		"			"
Hardstem Bulrush	Shoreline of pool, Sec. 1,2,3	Spot planting	100 Clumps	Root stocks	August			

TOTAL ACREAGE PLANTED:

Marsh and aquatic.....
Hedgerows, cover patches.....
Food strips, food patches.....
Forest plantings.....

INT.-DUP. SEC., WASH., D.C.

M17063

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Snake Creek County McLean State North Dakota

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Barley	310	7,835			279		589		589
Wheat	450	11,113			39		489		489
Rye	151	2,160					151		151
Oats	52	1,700					52		52
Corn					94		94		94
Millet					32		32		32
Grass/Crested wheat							58		58
								Fallow Ag. Land	890

*All Government share left in swath

No. of Permittees: Agricultural Operations 11 Haying Operations None Grazing Operations 3

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
None	None	None	None	1. Cattle	44	176	None	354
				2. Other				
				1. Total Refuge Acreage Under Cultivation				2,355
Hay - Wild	None	None	None	2. Acreage Cultivated as Service Operation				None

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

INT.-DUP. SEC., WASH., D.C. 91767

3-1570
NR-8a

REFUGE GRAIN REPORT

Refuge Snake Creek Months of January 1 through December 31 1964

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of				(6) On Hand End of Period	(7) Proposed or Suitable Use*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Barley Corn Wheat Mixed Rye	1000	30	1030 bu.			730	730 bu.	300 bu.		300 bu.	
Corn (Ear)	40	30	70 bu.			70	70 bu.	None			

(8) Indicate shipping or collection points

(9) Grain is stored at Refuge headquarters.

(10) Remarks All grain is mixed together and is suitable for food purposes only.

*See instructions on back.

NR-8a

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

(1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR–9.

(3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.

(4) A total of columns 2 and 3.

(6) Column 4 less column 5.

(7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.

(8) Nearest railroad station for shipping and receiving.

(9) Where stored on refuge: "Headquarters granary," etc.

(10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

Form NR-9

COLLECTIONS AND RECEIPTS OF PLANTING STOCK
(Seeds, rootstocks, trees, shrubs)

1620

Refuge ~~Snake Creek~~ Year 194~~7 68~~

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period or Collection	Method	Unit Cost	Amount	Source		
Crested Wheatgrass					300 lbs.	Lake Mattie Refuge	300 lbs.	

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PERSTICIDE APPLICATION

Refuge: **Snake Creek Refuge**

Proposal Number:

Reporting Year: **1964**

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
June	**Wild Mustard**	**Refuge farming units**	**600**	**2,4-D**	**50 gals.**	**2/3 pt. to an acre**	**Water 50 gals. to an acre**	**Power spray-ground**

10. Summary of results (continue on reverse side, if necessary)

35500